980264

WORK PLAN FOR SITE INVESTIGATION ACTIVITIES
RAY HOLTMAN FARM SACM SITE, NEAR
QUINCY, ILLINOIS

ILD 981 795 487

SUPERFUND TECHNICAL SUPPORT SECTION
U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION V

October 20, 1995

CONTENTS

1.0 INTRODUCTION

The Ray Holtman Farm site (the site) is a former landfill that is being proposed for investigation under the Superfund Accelerated Cleanup Model (SACM) program. The goal of the proposed investigation is to collect sufficient data to provide a basis for determining whether this site constitutes enough of a threat to human health and the environment to warrant expanded site investigation or if the site is a candidate for no further action. This workplan outlines a proposed investigation which will collect limited analytical data from ground water, surface water, and sediment samples using a minimum of time and resources.

2.0 SITE BACKGROUND

2.1 Site Description

The site is in a rural area about two miles south of the town of Quincy, Illinois (Figure 1). The site is 160 acres in size and is in the northeast quarter of section 25, Township 2 South, Range 9 West of the Third Principal Meridian, in Adams County. The eastern edge of the property is defined by 24th Street, which leads into Quincy. The site and its environs are located on the U.S. Geological Survey's Quincy Southwest, Quincy West, Quincy East, and Marblehead 7.5 minute Quadrangle Maps.

The former Holtman Residence and farm buildings are in the northeast corner of the property (Figure 2). The remainder of the site is primarily cultivated farmland. Ghost Hollow Creek, an intermittent stream, trends from the east-central part of the property through the northwest part of the property. The site is mostly gently rolling terrain; however the creek has steep banks. A private road, a shed, and two ponds are south of Ghost Hollow Creek. The ponds are reputed to be old borrow pits. A private road runs from 24th Street on the east side of the property west to the ponds.

The site is in an upland area about 0.5 miles east of the bluffs that demarcate the eastern border of the Mississippi River flood plain. Most of the land within four miles of the site is used for agricultural purposes or is forest.

Well logs and geologic maps indicate the uppermost bedrock geologic deposit beneath the site is a carbonate of Mississippian age. This deposit comprises a residential-supply aquifer in this area east of the Mississippi River floodplain. Ground-water flow in this aquifer is presumed to be from east to west. The bedrock is unconformably overlain by unconsolidated brown clay, presumed to be about 30 ft thick in this area based on well logs and reports of site visits. Ground-water flow in the unconsolidated

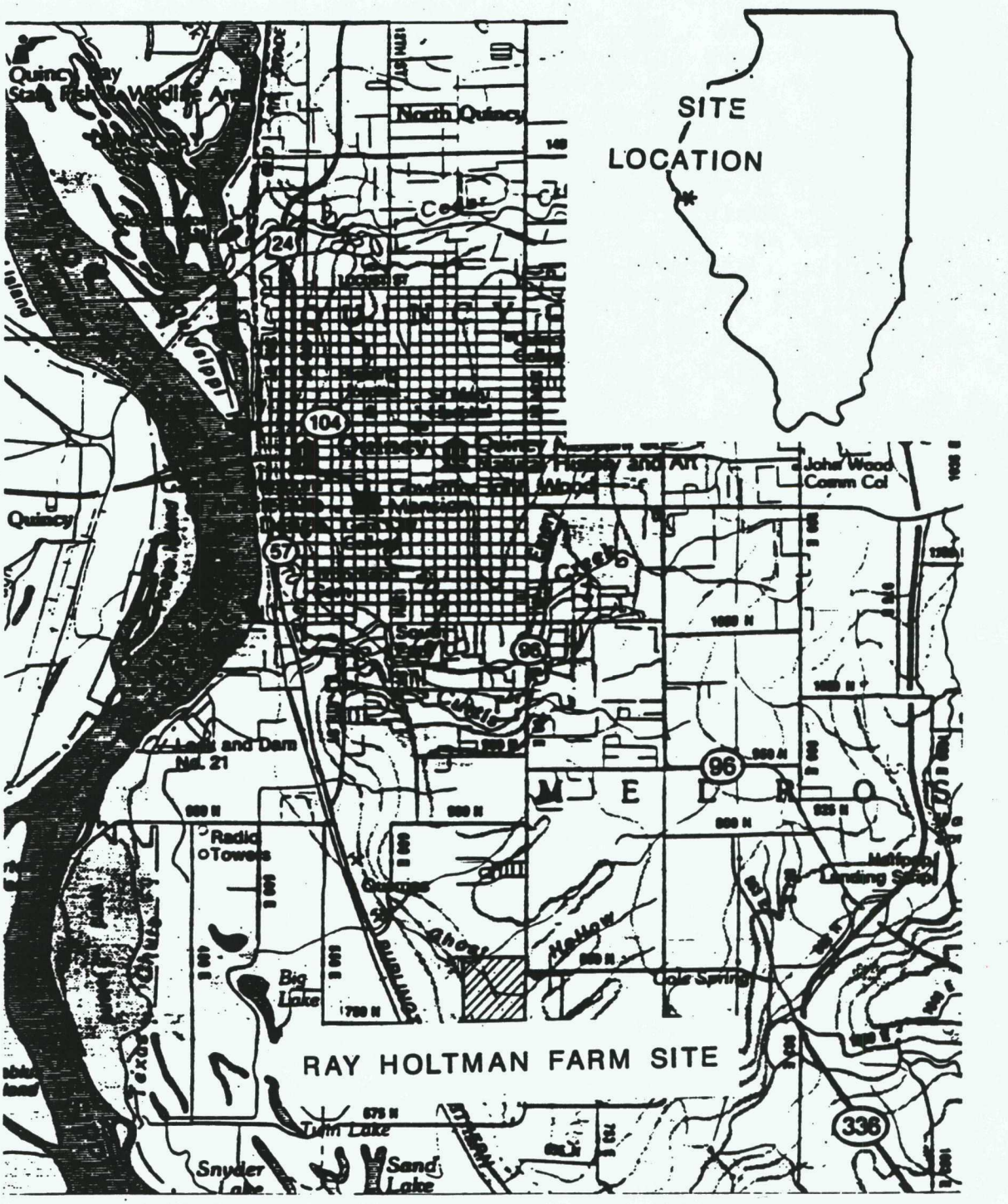


Figure 1. Site location

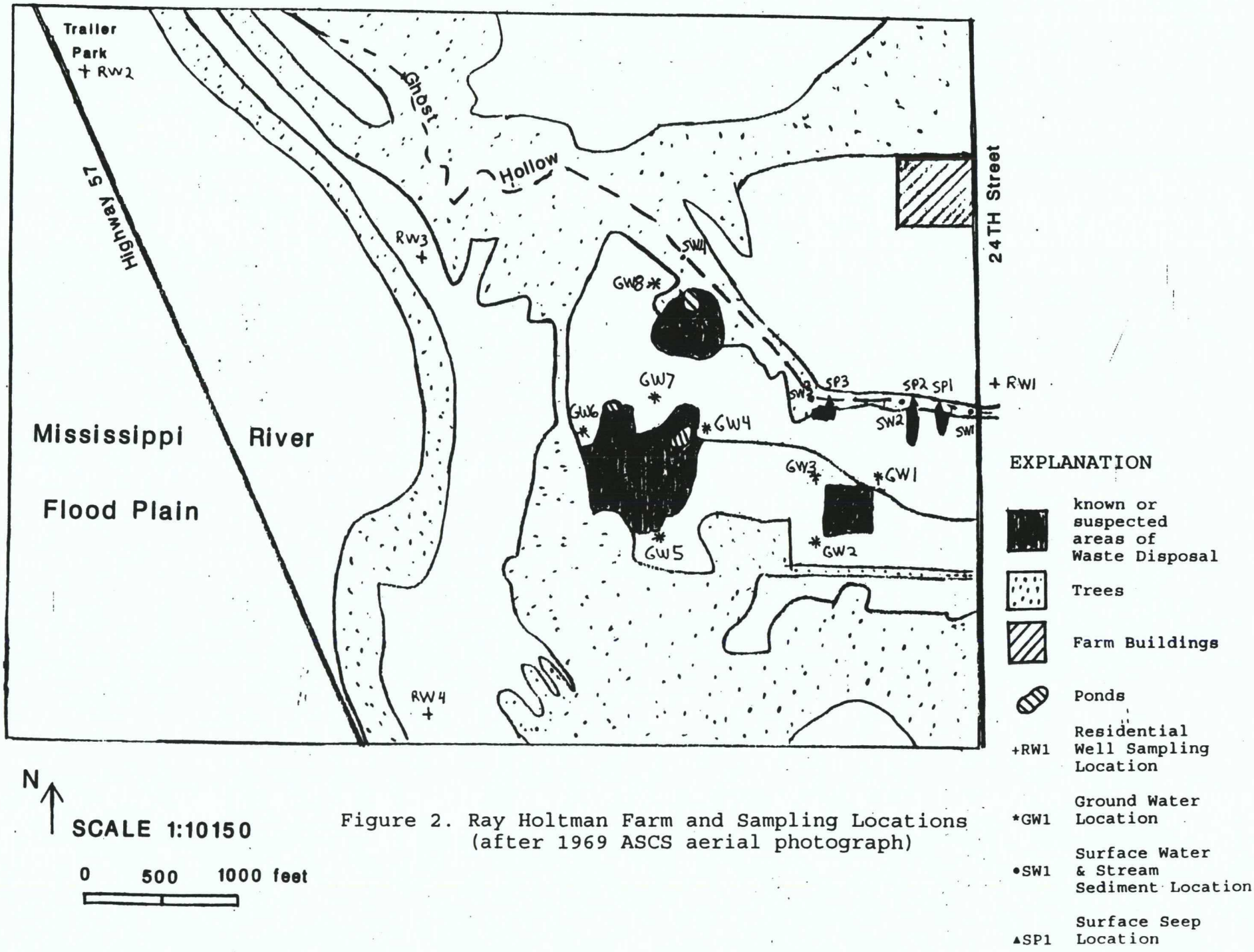


Figure 2. Ray Holtman Farm and Sampling Locations (after 1969 ASCS aerial photograph)

deposits is presumed to be downward, with a component of flow toward the north near the creek and toward the west in the southern part of the property away from the creek.

2.2 Site History

There are six areas at this site, all south of Ghost Hollow Creek, where landfilling is known or suspected to have occurred (fig. 2). There are three small areas located adjacent to Ghost Hollow Creek and three larger areas located on the currently cultivated upland. Landfilling operations began no later than the late 1950's and continued until the early 1970's. During the period of landfilling, the property was owned by Ray and Martha Holtman.

The site was operated by Mr. Holtman and his son, both of whom are now deceased. The site was owned by Mrs. Holtman after Mr. Holtman's death. After Mrs. Holtman's death in 1992, the site became the property of Ms. Mary Butler and Ms. Laura Daggett, her daughter and grand-daughter.

According to a report by B & V Corp. (1993, p. 2-1) wastes deposited at the site appear to include miscellaneous garbage, household appliances, tires, drums, and paint cans derived, in part, from the city of Quincy. Waste-disposal practices during filling are unknown. However Mrs. Holtman stated that up to three loads of waste were accepted each weekday and the wastes were covered with clay from the on site borrow pits. It is not known how often cover was applied or how much cover was used. Mrs Holtman identified three general large areas of landfilling on the upland (exact sizes unknown) and a fourth area along the creek. Tires were dumped near 24th Street after landfilling ceased and illegal refuse dumping is reported to have occurred along the creek banks in recent years. The tillable acreage at the site has been farmed since operations ceased.

The areas where landfilling is known or suspected to have occurred are currently partially or completely covered with clay fill and/or soil. Refuse is exposed in the upper part of the creek bank at three locations along the southern bank of the creek and in a small area south of the shed. No refuse is currently exposed at the suspected disposal areas in the western and south-central parts of the site (fig. 2).

2.3 Results of Previous Investigations

In April of 1986 the Illinois Environmental Protection Agency (IEPA) received a request from a neighbor of the Holtman's to initiate an investigation of this site. Sampling from the neighbor's residential-supply well in August 1986 for a variety

of compounds including VOCs, metals, and pesticides did not detect chemical contaminants. The well appears to be finished in Mississippian carbonate at a depth of 146 ft. The exact location of this well is unknown, but it is presumed to be adjacent to the site.

Sampling of a second residential-supply well located about 0.25 miles northwest of the site may, or may not, have occurred sometime in 1988. This well appears to have been completed in the Mississippian carbonate bedrock to a depth of about 110 ft. Well records indicate there is about 30 ft of clay overlying the bedrock near the site.

A Preliminary Assessment Reconnaissance Inspection was conducted in November 1988. Uncovered refuse including drums, paint cans, municipal garbage, and household appliances was visible along the entire 25 ft height of the bank at Ghost Hollow Creek. Refuse was visible on both the north and south sides of the creek. No obvious signs of leachate or surface-water contamination were observed during the inspection.

A site reconnaissance was conducted in October, 1992 by Black & Veetch Corporation. An area of exposed refuse about 40 ft wide was observed along the creek during this inspection. In addition to erosion into the waste deposits by the creek, erosion due to precipitation runoff was noted to have begun to form gullies in the wastes.

Surface soil and stream sediment were sampled for metals, VOCs, SVOCs, pesticides and PCBs in February 1992 by B & V Corp. on behalf of the USEPA. Sampling results indicate that stream sediment has been contaminated with Bis(2-ethylhexyl)phthalate, maximum concentration of 7,500 ug/L, potentially derived from the site. Sampling results indicate that surface soil in the landfill area has been contaminated with 4,4-DDE (5.1 ug/L), 4,4-DDT (15 ug/L), copper (68 mg/kg), iron (71,500 mg/kg), lead (122 mg/kg) and nickel (70 mg/kg).

2.4 Results of Field Survey

On September 5 and 6, 1995, employees of the U.S. Environmental Protection Agency, the U.S. Geological Survey, and the Illinois Department of Public Health conducted of field survey of the site. This survey was designed to assess field conditions and to verify the results of field surveys conducted by previous investigators.

Miscellaneous waste, including glass bottles and paint cans, was observed at two ravines along the southern bank of Ghost Hollow Creek near 24th street (fig. 2). This waste appears to have been originally covered with clay, but erosion at the ravines has

partially exposed the wastes. Because some of the waste in this area appears to have been covered with clay and planted over, the full extent of the waste in this area could not be determined from the field survey. Water seeps were observed at each ravine.

A third area of waste disposal was observed along the southern bank of Ghost Hollow Creek further west during the field survey. Wastes in this area include empty 55-gallon drums and household appliances. These wastes do not appear to have been covered with clay. These wastes have been used to infill a ravine and are also present along a section of Ghost Hollow Creek from the ravine to a point about 40 ft east of the ravine. No surface seeps were observed at this location because of the amount of fill in the ravine. It is expected that seeps are present along the ravine near the waste.

Another area of waste disposal was identified on the upland to the south of the shed and pond near the eastern edge of the site. A few recently emplaced empty pesticide containers and several tires were present at this location. No other wastes were observed in the western portion of the site. This area is currently covered with soil and under cultivation for corn.

An empty 55-gallon barrel was observed near the creek directly north of the shed. No other wastes were observed in this area.

An area near the south-central part of the site was identified during a previous investigations as a possible landfill. This area was covered with soybeans during the September 1995 site visit, and no waste was observed at this location.

2.4 Results of Analysis of Aerial Photographs

Vertical aerial photographs of the site, taken by the Department of Agriculture in 1963 and 1969, were reviewed by the U.S. Environmental Protection Agency during September, 1995 to assess site conditions during the period of waste disposal. These photographs indicate a large disturbed area west of the shed and pond in 1963. The photographs taken in 1969 shows a new square disturbed area in the south central part of the site as well as disturbance seen in 1963. The disturbed area in the western part of the site observed in the 1963 photographs appears to have been inactive and possibly covered by 1969. Areas of waste disposal along the creek were not apparent in either 1963 or 1969.

3.0 PROPOSED WORK

The objective of this investigation is to determine if contamination associated with wastes deposited at the Holtman Farm Site are being released to surface-water, ground-water, or

stream sediment, and if these releases constitute a potential threat to human health and/or the environment that would warrant an expanded site investigation. Previous investigations associated with the Ray Holtman Farm Site involved limited soil and sediment samples. Data gaps, particularly the absence of water-quality data, have been identified. The proposed work outlined in this workplan is intended to fill these gaps with a minimum expenditure of time and resources.

Proposed work activities at the site include the sampling of ground water quality in residential-supply wells and the sampling of surface-water quality in Ghost Hollow Creek and from seeps located in the ravines along the valley of Ghost Hollow Creek where waste is deposited. This investigation also includes the collection of ground water samples from temporary well points using direct push equipment (Geoprobe™). Protocols for site health and safety during these activities are presented in the Health and Safety Plan for the site. Procedures for equipment decontamination as well as the collection, storage, processing, preservation, and shipping of samples is described in the Quality Assurance Project Plan (QAPP) for the site. Water-quality analysis is to be done by the USEPA CRL and/or CLP. Thorough notes will be taken describing all pertinent information on site activities. This includes, but is not limited to, lithologic descriptions, and field measurements.

3.1 Residential-Well Sampling

Water samples will be collected from four residential-supply wells in the vicinity of the site (fig. 2). Pertinent information on the well (depth, open interval) will be obtained from the owner prior to sample collection. This sampling will be done to determine if contaminants derived from the site are present in residential-supply wells in the area.

Samples will be collected from a faucet from which water does not go through a treatment system such as a water softener, heater, or filter. Samples will be collected at a point before the pressure tank, if possible. If not possible, the well will be pumped to purge the tank and water in storage in the pipes. Purging should take about 30 minutes.

During purging water will be measured for field parameters (pH, specific conductance, eH, and temperature) using an in-line flow-through cell hooked up to a hose from the faucet. Measurements will be collected every five minutes until these parameters have stabilized for three successive readings. Stabilization will be presumed to have occurred if temperature and pH vary by less than 0.10 units, and eH and specific conductance vary by less than 10 percent. Samples will be collected and analyzed for TCL VOCs, TCL SVOCs, Pesticides/PCBs, and metals.

3.2 Stream Sampling

Surface-water samples of Ghost Hollow Creek will be collected at six sites (fig. 2). One sample will be collected upstream (east) of 24th street and the site. The second sample will be collected immediately downstream (west) of the intersection of 24th street and the creek. Three samples will be collected in the areas of exposed waste at the landfills immediately south of the creek. The sixth sample will be collected approximately 0.25 miles further downstream (downstream of a large suspected waste area). This sampling will be done to determine if compounds in the waste are impacting surface-water quality at the stream.

Sampling will occur when the creek is at low stage. If possible, samples will be taken from areas where flow is occurring, not from areas where water has ponded. Samples will be collected from downstream to upstream to minimize stream turbidity. Stream samples will be collected prior to collection of seep samples and samplers will stand downstream of the point of sample collection to minimize turbidity. Water samples will be collected from mid-depth in the stream, prior to collection of the associated sediment sample. Samples will be collected by manually submerging the sample container into the water.

Field parameters (pH, specific conductance, eH, and temperature) and dissolved oxygen (DO) will be measured at each sampling site after sample collection so as not to disturb the sampling results. Samples will be collected and analyzed for TCL VOCs, SVOCs, metals, and pesticides/PCBs.

3.3 Sediment Sampling

Stream sediment samples will be collected at each of the locations where stream water has been sampled. This sampling will be done to determine if compounds from wastes and surface water are being incorporated into the stream sediment and if they are migrating with the sediment downstream.

Sediment samples will be collected after water samples have been collected to minimize disturbance to the surface water samples. Samples will be collected using a stainless steel trowel to dig up the sediment and place it into the appropriate sample jars. Sediment samples will be collected and analyzed for TCL VOCs, TCL SVOCs, metals, and pesticides/PCBs.

3.4 Seep Sampling

Surface-water samples will also be collected from seeps at each of the three ravines where wastes have been disposed (fig. 2).

This sampling will be done to determine if compounds in the waste are impacting surface- and ground-water quality.

Samples of the seeps will be collected by digging a hole into the side of the ravine with a stainless steel trowel. A stainless steel bowl will be placed in the hole and allowed to fill with water from the seeps. Once the bowl has filled, the sample can be collected. Excepting VOCs, samples will be collected by submerging a 1 liter polyethylene bottle in the bowl until the bottle is filled then transferring the water from the polyethylene bottle into the sample bottles. Samples for VOCs will be collected by submerging the sample bottles in the bowl to a point where the top of the bottle, when tipped slightly, is below the water level in the bowl and the bottle slowly fills to the point where the water level in the bottle is just below the top of the bottle. At that point the sample bottle will be removed from the stainless steel bowl and the cap of the sampling bottle will be submerged into the bowl. Water will be carefully transferred from the bottle cap into the sampling bottle until the bottle has been filled (this should require less than one capful of water) and can then be capped.

Field parameters (pH, specific conductance, eH, and temperature) and dissolved oxygen (DO) will be measured at each sampling location after seep sample collection so as not to disturb the sampling results. Samples will be collected and analyzed for TCL VOCs, SVOCs, metals, and pesticides/PCBs.

3.5 Ground Water Sampling

Ground-water samples will be collected from each of the 12 temporary well point locations (Figure 2) to determine if contaminants in the waste (if any) are being released to ground water. Samples will be collected from locations around each of the large suspected areas of waste deposition on the uplands of the site.

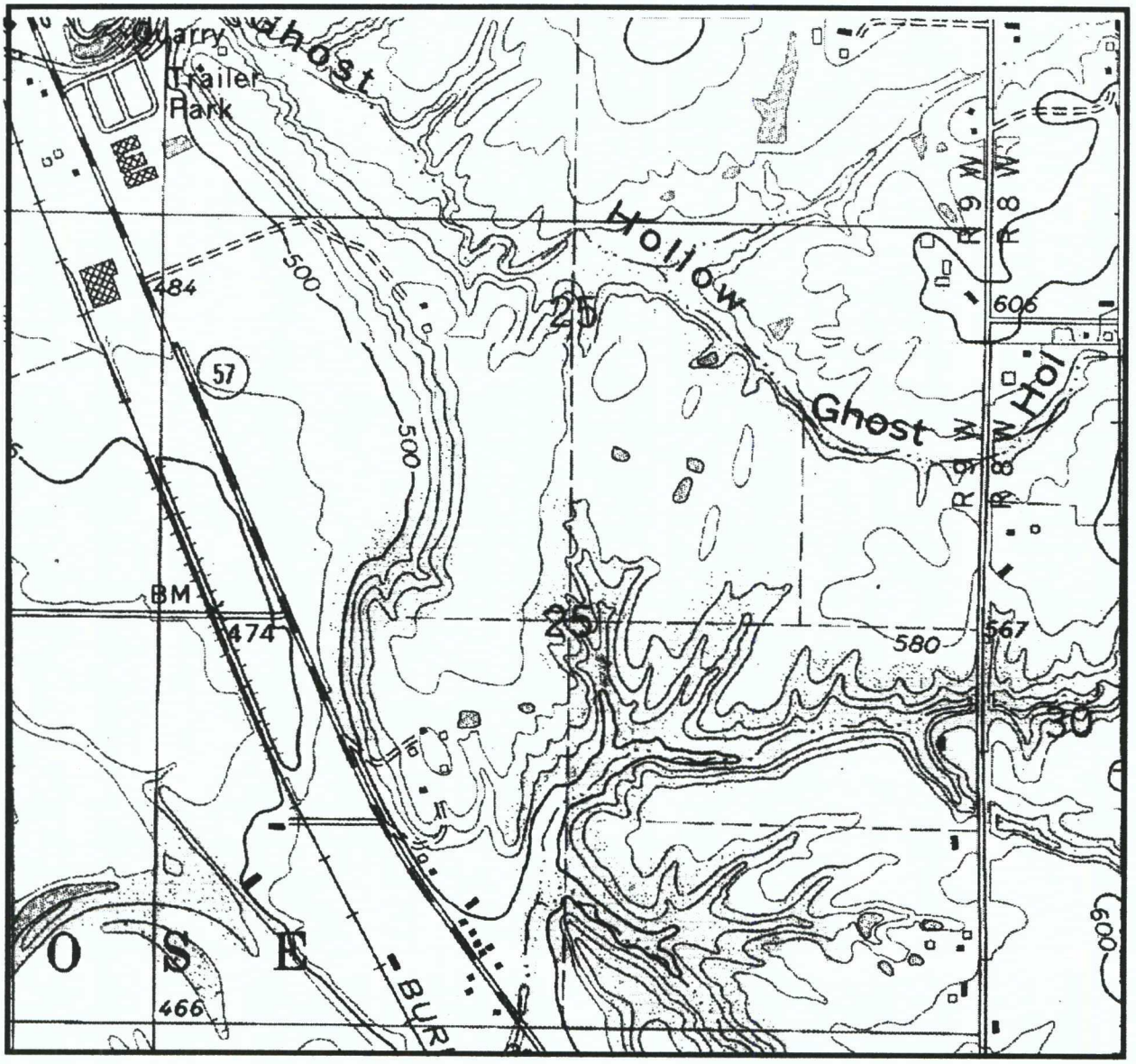
Direct push equipment (Geoprobe™) will be used to insert temporary well points into the uppermost groundwater bearing zone. Ground water samples will be collected using a peristaltic pump in each well point. If the well point is capable of sustaining pumping, the wells will be purged for three well volumes. The volume of water purged from the well will be calculated by determining the amount of water discharged to a 5-gallon bucket. Discharge water will be disposed of on site.

Once purging has been completed, samples will be collected and analyzed for TCL VOCs, TCL SVOCs, TCL metals, and TCL pesticides and PCBs. The metals sample will not be filtered. Field parameters (pH, specific conductance, eH, and temperature) and turbidity will also be measured prior to sample collection.

REFERENCES

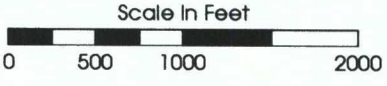
B & V Waste Science and Technology Corp, 1993, Screening site inspection final report for Ray Holtman farm site: Prepared for the U.S. Environmental Protection Agency, Chicago, Ill. 35 p.

Ray Holtman Farm



Index Map

Illustration From USGS Topographic Map
Quincy West, Ill.-Mo. and Quincy SW, Mo.-Ill.
7.5 Minute Series



Quadrangle Location

Technical Support Section
Chicago, Illinois

Figure 1

N
W E
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Region 5
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Technical Support Section
Chicago, Illinois

Figure 2. Ray Holtman Farm (1969 ASCS aerial photograph)

Scale = 1:10150

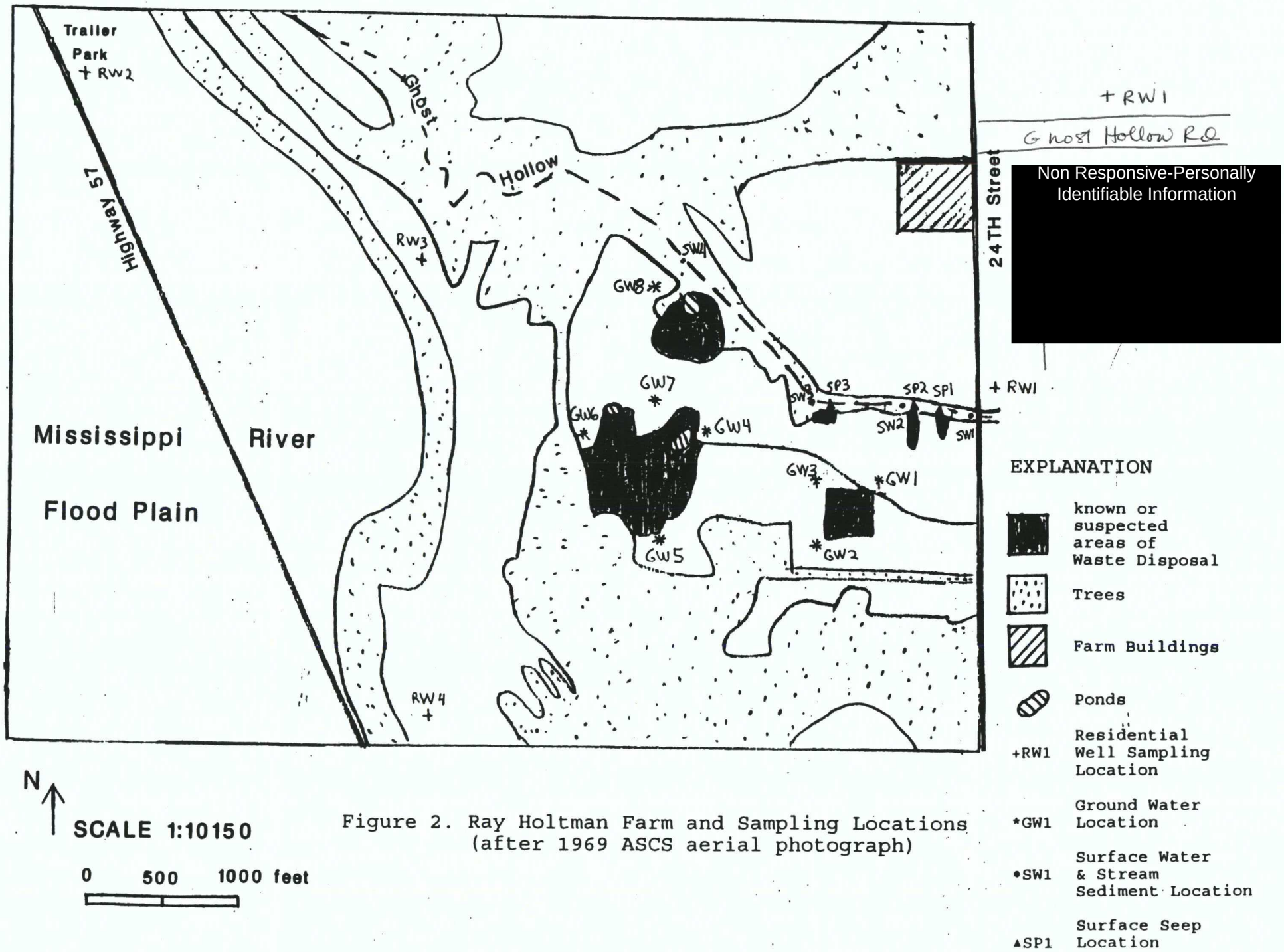

Figure 2. Ray Holtman Farm and Sampling Locations (after 1969 ASCS aerial photograph)